Networking your world

NVF-200SE/PD KIT

Ethernet Extender with Remote Power

User's Manual

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Foreword

NVF-200SE system delivers power and IP connectivity at distances up to 1km (3,280ft) using existing or new copper twisted pair phone cable. These innovative transmission techniques result in power feeding and data over a single pair phone wire and are ideal for deploying extended Ethernet where there are no or limited electricity at one end. With automatic fault protection and power monitoring, these ensures reliable delivery of essential power and data / video to and from remote locations. Operators in diverse enterprises will now be able to deploy PoE devices in any service location. Install network security cameras, wireless access points, security / RFID scanners or access control systems in any place where you have basic wire connectivity.

The NVF-200SE / PD provide extended-length power and Ethernet connections over one pair **Cat. 3 or above twisted pair** phone cable. The NVF-200SE / PD works as Ethernet to / from VDSL subscriber site conversion bridge. The NVF-200SE / PD uses VDSL technology which support 5M / 15 / 25Mbps per port symmetrical bandwidth over phone wiring with long driver capable of a maximum **1km / 0.8km / 0.5km** (3280ft / 2624ft / 1680ft).

The front-panel provides LED indicators of power system and interface status. Full- or half-duplex mode of LAN operation is automatically sensed and configured. VDSL link rates are configured by NVF-200SE over the auto-speed / fix speed function. Therefore, NVF-200SE / PD supports auto-speed / fix speed, plug & play operations on the subscriber-site and power protections as OVP(Over Voltage Protection), OCP(Over Current Protection), OTP(Over Temperature Protection), robust short-circuit protection and surge protection, as well as are part of an ideal solution for delivering cost-effective, high-performance broadband / multimedia services to point to point application.

Attention:

Be sure to read this manual carefully before using this product. Especially Legal Disclaimer, Statement of Conditions and Safty Warnings.

Caution:

The NVF-200SE/PD is for **indoor** applications only. This product does not have waterproof protection. Do not use in harsh environments (Over temperature range: 0℃ ~ 50℃ (32℉ ~ 122℉)).

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions before using the device.

- **DO NOT** open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact your vendor for further information.
- **Use ONLY** the dedicated power supply for your device. Connect the power cord or power adapter to the right supply voltage (110V AC in North America or 230V AC in Europe).
- **DO NOT** use the device if the power supply is damaged as it might cause electrocution. If the power supply is damaged, remove it from the power outlet. DO NOT attempt to repair the power supply. Contact your local vendor to order a new power supply.
- **Place** connecting cables carefully so that no one will step on them or stumble over them. DO NOT allow anything to rest on the power cord and do not locate the product where anyone can work on the power cord.
- **DO NOT** install nor use your device during a thunderstorm. There may be a remote risk of electric shock from lightning.
- **DO NOT** expose your device to dampness, dust or corrosive liquids.
- **DO NOT** use this product near water, for example, in a wet basement or near a swimming pool.
- **Connect ONLY** suitable accessories to the device. Make sure to connect the cables to the correct ports.
- **DO NOT** obstruct the device ventilation slots, as insufficient airflow may harm your device.
- **DO NOT** place items on the device.
- **DO NOT** use the device for outdoor applications, and make sure all the connections are indoors. There may be a remote risk of electric shock from lightning.
- **Be careful** when unplugging the power, because the transformer may be very hot.
- **Keep** the device and all its parts and accessories out of children's reach.
- **Clean** the device using a soft and dry cloth rather than liquid or atomizers. Power off the equipment before cleansing it.
- This product is **recyclable**. Dispose of it properly.

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Chapter 1. Unpacking Information

1.1 Check List

Carefully unpack the package and check its contents against the checklist.

Package Contents:

- 1 x NVF-200SE + 1 x NVF-200PD
- 2 x 48V / 0.4A Power Adapter
- 2 x AC to DC Power Cord
- 2 x RJ-45 Ethernet cable
- 1 x User's Manual CD
- 4 x Rubber foot

Notes:

1. Please inform your dealer immediately for any missing or damaged parts. If possible, retain the carton including the original packing materials. Use them to repack the unit in case there is a need to return for repair.
2. Power supply included in package is commercial-grade. Do not use in harsh environments.
3. Do not only use one of the Power Adapter, otherwise the performance will less than half.

Chapter 2. Installing the Bridge

2.1 Hardware Installation

This chapter describes how to install the bridge and establishes network connections. You may install the bridge on any level surface (e.g. a table or shelf). However, please take note of the following minimum site requirements before you begin.

2.2 Pre-installation Requirements

Before you start the actual hardware installation, make sure you can provide the right operating environment including power requirements, sufficient physical space and proximity to other network devices that are to be connected.

Verify the following installation requirements:

- Power requirements: **2 x 48VDC / 0.4A**
- The bridge should be located in a **cool dry place** with at least **10cm / 4in** of space at the front and back for ventilation.
- Place the bridge away from **direct sunlight**, **heat sources**, or areas with a high amount of electromagnetic interference.
- Check if the network cables and connectors needed for installation are available.
- **Do Not** install phone lines strapped together with AC power lines, or telephone office line with voice signal.
- Avoid installing this device with radio amplifying station nearby or transformer station nearby.
- Please connecting FG of NVF-200SE and NVF-200PD on rear panel to earth ground.

2.3 General Rules

Before making any connections to the bridge, please note the following rules:

- **Ethernet Port (RJ45)**
  All network connections to the bridge Ethernet port must be made using Category 5 UTP for 100Mbps, Category 3, 4 UTP for 10Mbps.
  No more than 100 meters of cabling may be used between the MUX or HUB and an end node.
- **Line Port (RJ-45 / Terminal block)**
  All Home network connections to the line port must use single pair **22~26** gauge with twisted pair phone wiring. RJ-45 and terminal block is shared and cannot be used together at the same time.
- We **do not** recommend using **28 gauge** or above phone line.

2.4 Connecting the NVF-200SE and NVF-200PD

NVF-200SE two power adapters must be connected first before switch can be powered on. Make sure to use AC power cord provided with your device, as other AC power cord with grounding pin will make the distance reach shorter.
NVF-200SE/PD has one RJ-45 fast Ethernet port which support connection to Ethernet operation. The devices attached to these ports must support auto-MDIX and auto-negotiation or 10Base-T OR 100Base-TX unless they will always operate at half-duplex. NVF-200PD fast Ethernet port is used to connect to external power splitter(POE) or build in power splitter of networking devices such as IP CAM, VOIP, wireless AP, sensor scanner or other power splitter(PD side) more than 15.4W.
The line port has 2 connectors: RJ-45 and terminal block. It is used to connect from NVF-200SE using single pair phone cable to NVF-200PD bridge side (point to point solution). Take note that NVF-200SE/PD line port cannot be used at the same time. Either RJ-45 port is connected or terminal block is connected using straight connection (Figure2.1) or cross-over connection (Figure2.2).

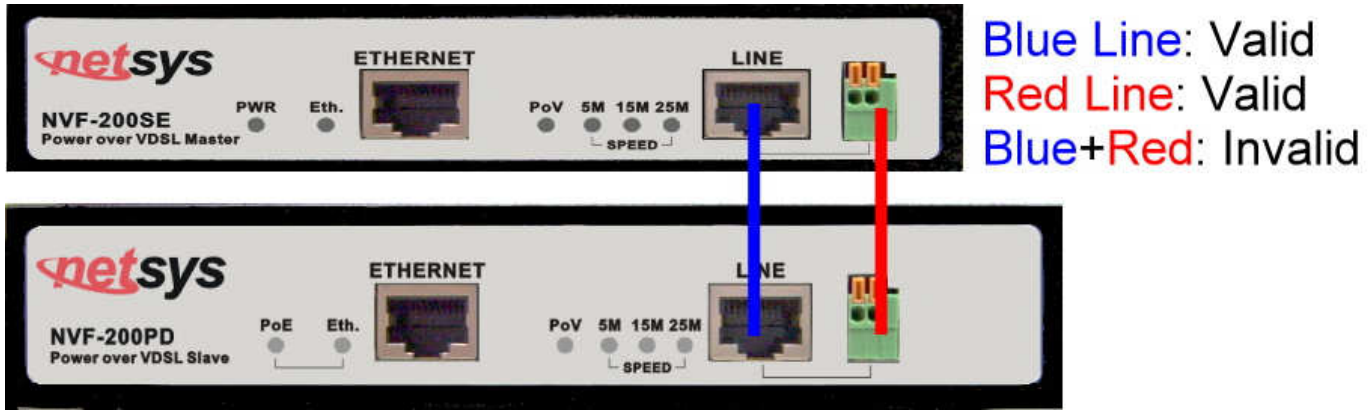


Figure2.1: NVF-200SE/PD line ports straight connection

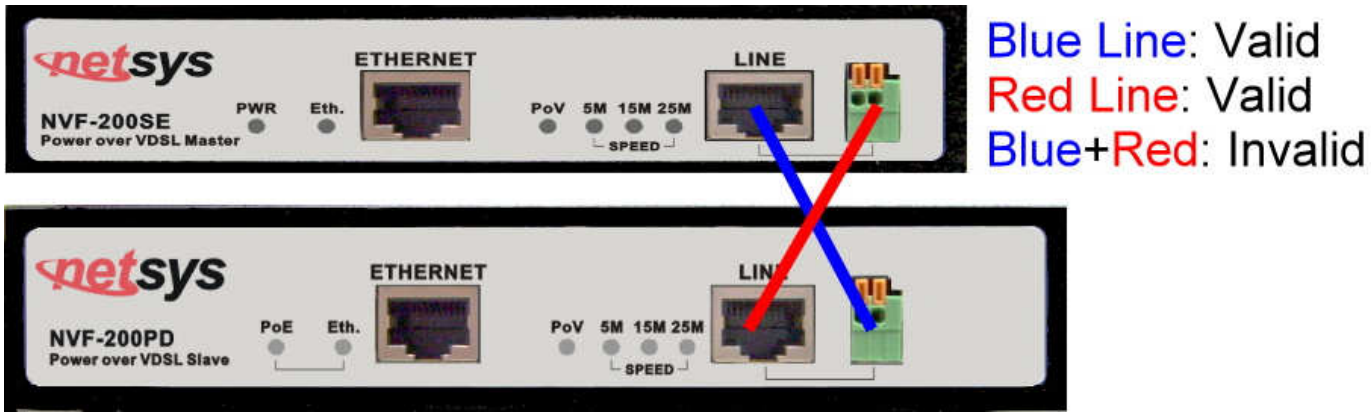


Figure 2.2: NVF-200SE/PD line ports crossover connection

2.5 Connecting the Line / Ethernet Ports

1. The bridge's line port supports max distance of 1km at 5M/5M or max speed of 25M symmetrically with distance up to 500m for data service across existing phone wiring. It is easy-to-use which do not require installation of additional wiring. Every modular phone jack in the home can become a port on the LAN. Networking devices can be installed on a single telephone wire that can span within 1km or 500m (depends on speed) between the two farthest points. (Figure 2.3)

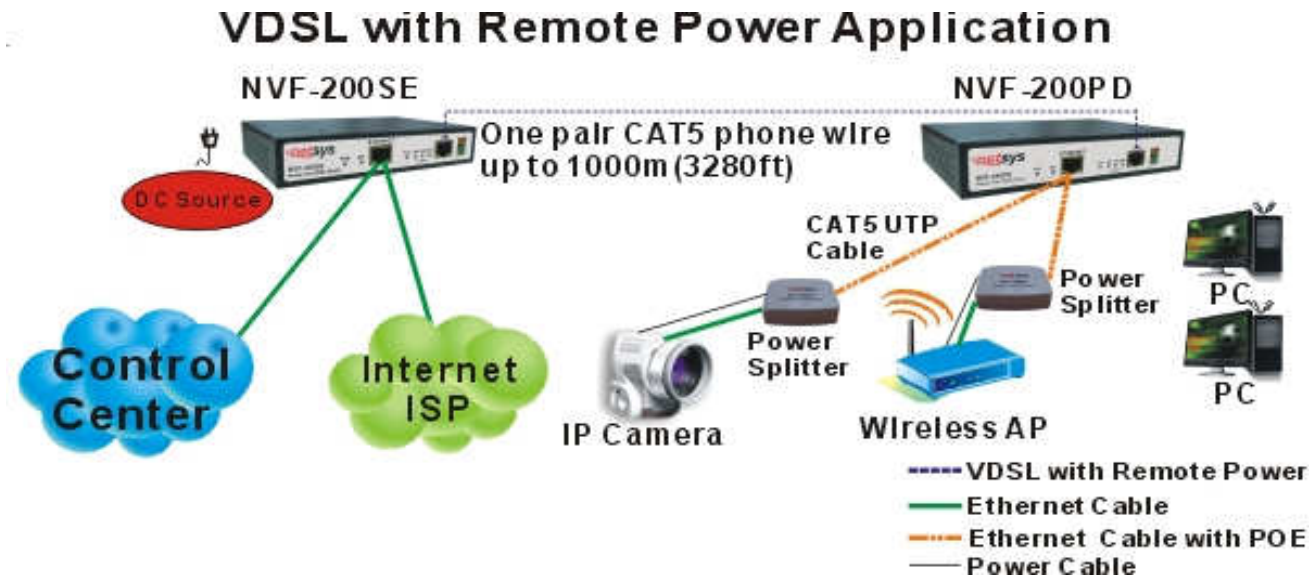


Figure 2.3: Master / Slave Ethernet extender with remote power point-to-point application

2. Use only twisted pair cable with RJ-45 connectors that conform to Ethernet standard. When inserting a RJ-45 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated.

Notes:

1. Be sure each twisted-pair cable (RJ-45) does not exceed 100 meters (328 feet).
2. Line port must use 22 ~ 26 gauge phone wiring, we do not recommend 28 gauge or above.
3. We advise using Category 3, 4, 5 cables for cable bridge or router connections to avoid any confusion or inconvenience in the future when you attached to high bandwidth devices.
4. **Be sure phone wiring has been installed before NVF-200SE and NVF-200PD powered on.**

Chapter 3. Hardware Description

This section describes the important parts of the bridge. It features the front panel and rear connectors.

3.1 NVF-200SE / NVF-200PD Detailed View

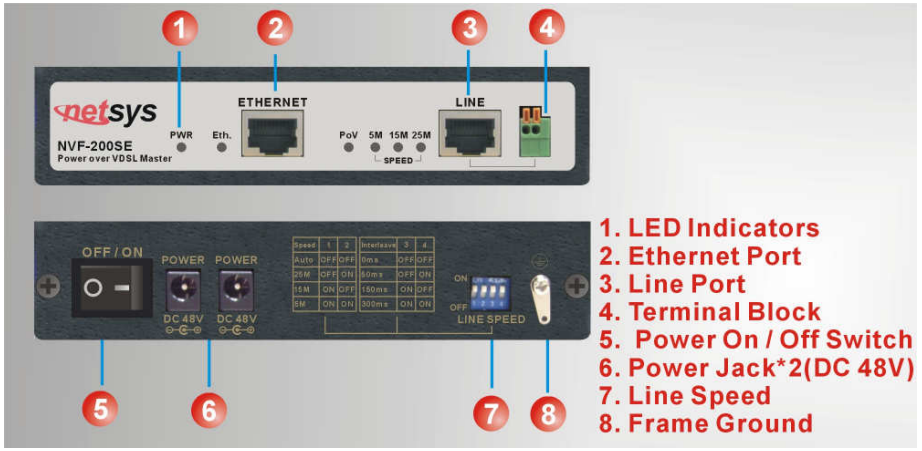


Figure 3.1: NVF-200SE detailed view

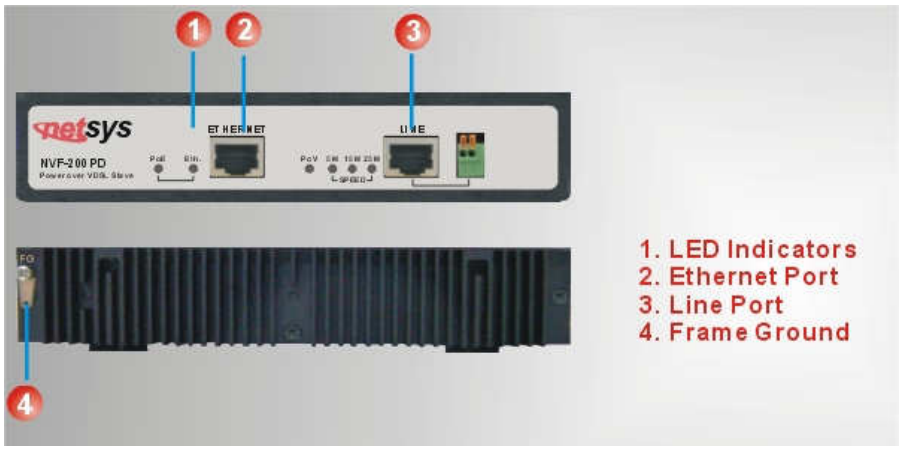


Figure 3.2: NVF-200PD detailed view

3.2 Front Panel

The figure shows the front panel of both NVF-200SE and NVF-200PD. (Figure 3.3)

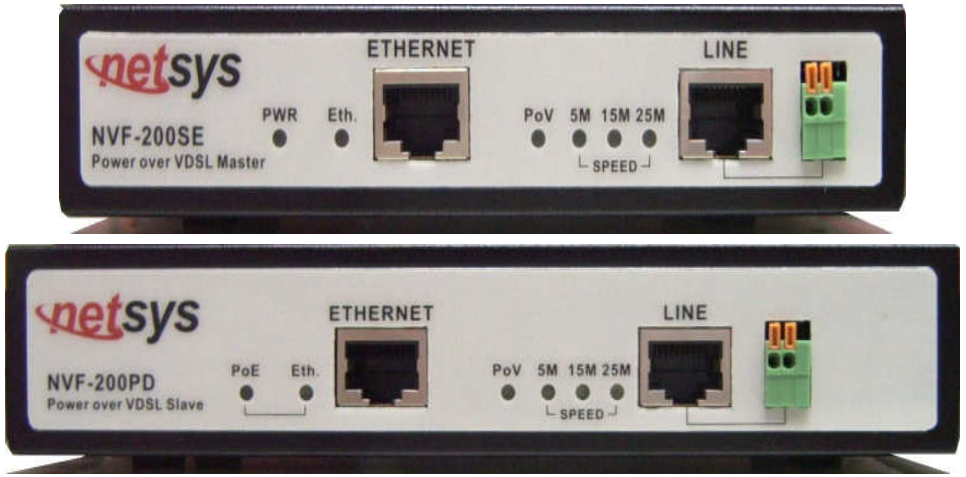


Figure 3.3: Front Panel of NVF-200SE/PD

At a quick glance of the front panel, it is easy to tell if the bridge has power, if it has signal from its Ethernet RJ-45 port, if it is either providing or receiving power and if there is line signal on the line port. (Table 3-1)

Table 3-1: Description of the bridge front interface

Interface	Connector Type	Description
Line	RJ-45 / Terminal Block	For connecting to NVF-200SE/PD bridge.
Ethernet	RJ-45	For connecting to the networking device for NVF-200SE. For connecting to the networking device with power splitter or connecting to external power splitter for NVF-200PD.

3.3 Front Indicators

The bridge has **Six** LED indicators. The following table shows the description. (Table 3-2)

Table 3-2: LED Indicators Description and Operation

LEDs	Color	Status	Descriptions
PWR (Power LED For NVF-200SE only)	Green	On	The system power is normal and functioning properly.
		Off	The system power is not ready or has malfunctioned.
PoE (Power over Ethernet LED for NVF-200PD only)	Green	On	The power injector had detected the power splitter (IEEE802.3af).
		Blinking	The device connected to the power splitter is a non-standard POE.
		Off	The power injector has not detected the power splitter.
Eth. (Ethernet LED)	Green	On	The device has a good Ethernet connection.(Link)
		Blinking	The device is transmitting / receiving data.(Activity)
		Off	The LAN is not connected.
PoV (Power over VDSL)	Green	On	For NVF-200SE the device power feeding is ready. For NVF-200PD the device is remote power link good.
		Off	The device is not ready or has malfunctioned.
5M (Speed LED)	Green	On	The device is in good linkage at 5Mbps data rate.
		Off	The device connection is down.
15M (Speed LED)	Green	On	The device is in good linkage at 15Mbps data rate.
		Off	The device connection is down.
25M (Speed LED)	Green	On	The device is in good linkage at 25Mbps data rate.
		Off	The device connection is down.

3.4 Rear Panel

The following figure shows the rear connectors. (Figure 3.4)

Figure 3.4: Rear connectors of NVF-200SE/PD respectively

At quick glance, you can see the DIP switch setting at default mode, where it is in auto-speed and interleave delay is set to 0ms as shown in (Figure 3.5).

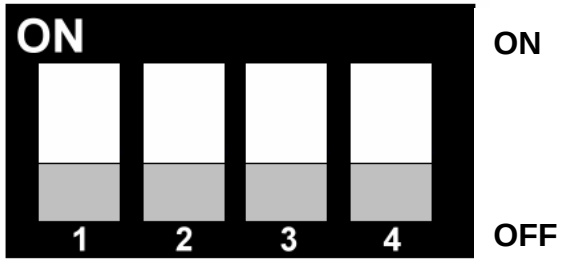


Figure 3.5: DIP switch setting

◆ **Speed Mode config:**

To config the data speed to **25Mbps**: Pin 2 must be switch ON while pin 1 is OFF.
To config the data speed to **15Mbps**: Pin 1 must be switch ON while pin 2 is OFF.
To config the data speed to **5Mbps**: Both pin 1 and pin 2 have to switch to ON.

◆ **Interleave Delay Mode config:**

To config the interleave delay to **0ms**: Both pin 3 and pin 4 have to switch to OFF.
To config the interleave delay to **100ms**: Pin 4 must be switch ON while pin 3 is OFF.
To config the interleave delay to **150ms**: Pin 3 must be switch ON while pin 4 is OFF.
To config the interleave delay to **300ms**: Both pin 3 and pin 4 have to switch to ON.

Table shows the summary of DIP switch configuration. (Table 3-3)

Table 3-3: DIP Switch Configuration

Speed Mode	Switch 1	Switch 2
Auto speed	OFF	OFF
25Mbps	OFF	ON
15Mbps	ON	OFF
5Mbps	ON	ON

Interleave Delay	Switch 3	Switch 4
0ms	OFF	OFF
100ms	OFF	ON
150ms	ON	OFF
300ms	ON	ON

Chapter 4. About performance

4.1 Auto and manual data speed selector description:

NVF-200SE is a VDSL solution which supports real plug & play and can do auto and manual selection of the data speed, the setting of the data speed depends on the phone cable limit length, they can support 5M/15M/25Mbps symmetrical data service. If NVF-200SE try to link at the data speed of 15Mbps but fails to do so, then NVF-200SE data speed must be lowered due to the limitation of the phone cable length. If the cable length is unsure, then auto selection of the data speed at the default setting is recommended. Power must be unplug before changing the data speed then power on and wait for VDSL to link again at the correct data speed function.

Speed mode limitation:

- 5M/5M mode within 1km (3280ft)
- 15M/15M mode within 800m (2624ft)
- 25M/25M mode within 500m (1640ft)

Note:

1. We recommend phone cable that must meet Cat. 3 standard or above and without clustering.
2. The performance data above is for reference only, the actual distance will vary on the quality of the copper wire and environment factors. We recommend using 24~26 gauge and Cat. 3 standard or above phone wiring, otherwise the above guarantee will be void.

4.2 Distance & power relational tables

The table describes connect to a loading device of the output voltage of 12V, calculate the distance and the relationship between power consumption.(Table 4-1)

Table 4-1: Distance & power relational tables

Distance(m)	Speed(Mb)	PoV	Link	Power W(max)	Output Voltage(V)	Output Current(A)
30	25	OK	OK	11.67	12	0.97
100	25	OK	OK	11.67	12	0.97
200	25	OK	OK	11.69	12	0.97
300	15	OK	OK	11.7	12	0.98
400	15	OK	OK	9.36	12	0.78
400	5	OK	OK	10	12	0.83
500	15	OK	OK	8	12	0.67
500	5	OK	OK	8	12	0.67
600	5	OK	OK	6	12	0.5

Note:

If you would like to know overall power consumption, NVF-200SE plus NVF-200PD both typical Power Consumption: **43.2W**

Appendix A: Cable Requirements

A.1 Ethernet Cable

A CAT. 3, 4 or 5 twisted pair cable is typically used to connect the Ethernet device to the bridge. A 10Base-T cable often consists of four pairs of wires, two of which are used for data transmission and the other two pairs are used for power transmission. The connector at the end of the 10Base-T cable is referred to as RJ-45 connector and it consists of eight pins. The Ethernet standard uses pins 1, 2, 3 and 6 for data transmission purposes, power supply uses pins 4, 5 and ground uses pins 7, 8. (Table A-1)

Table A-1 RJ-45 Ethernet Connector Pin Assignments

PIN #	MDI		MDI-X	
	Signal	Media Dependant interface	**Signal**	Media Dependant interface-cross
1	TX+	Transmit Data +	RX+	Receive Data +
2	TX-	Transmit Data -	RX-	Receive Data -
3	RX+	Receive Data +	TX+	Transmit Data +
4	48V	NVF-200PD only	48V	NVF-200PD only
5	48V	NVF-200PD only	48V	NVF-200PD only
6	RX-	Receive Data -	TX-	Transmit Data -
7	Ground	NVF-200PD only	Ground	NVF-200PD only
8	Ground	NVF-200PD only	Ground	NVF-200PD only

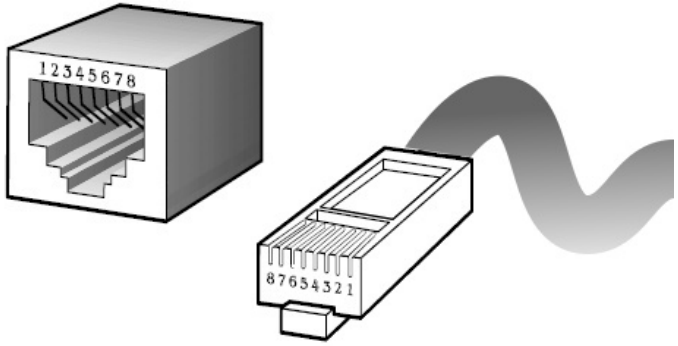


Figure A-1 Standard RJ-45 repectacle/connector

Note:

Please make sure your connected cables are with same pin assignment as above table before deploying the cables into your network.

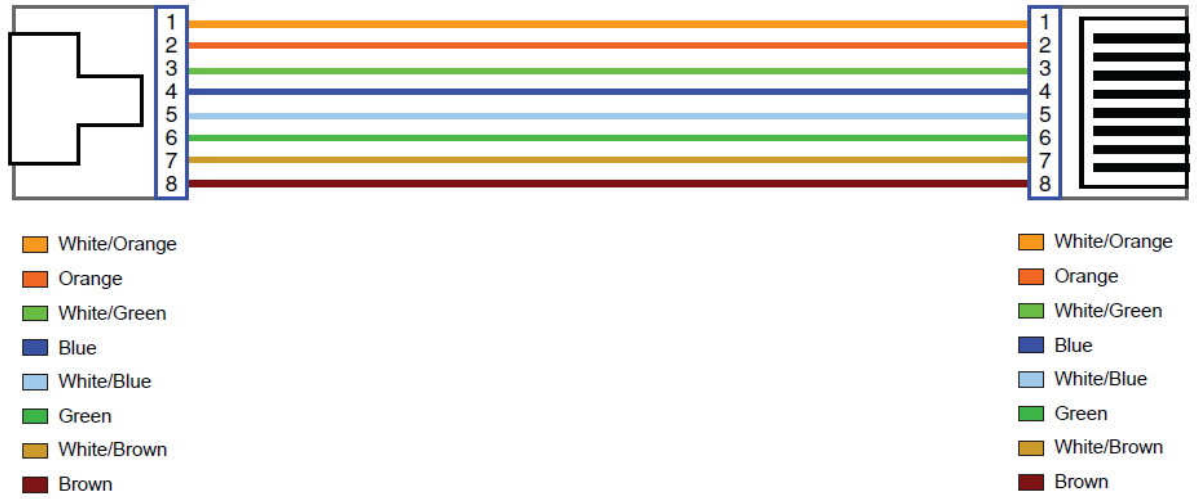


Figure A-2 Pin Assignments and Wiring for an RJ-45 Straight-Through Cable

Figure A-3 Pin Assignments and Wiring for an RJ-45 Crossover Cable

A.2 Telephone wire

Standard telephone wire of any gauge or type-flat, twisted or quad is used to connect the bridge to the telephone network. A telephone cable typically consists of three pairs of wires, one of which is used for transmission. The connector at the end of the telephone cable is called RJ-45 connector and it consists of eight pins. VDSL signal use pins 4 and 5 for data transmission. A telephone cable is shown below. (Figure A-4)

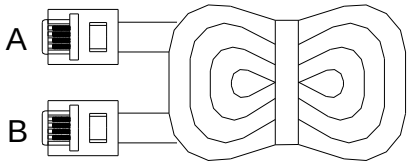


Figure A-4: Telephone cable

The A and B connectors on the rear of the bridge are RJ-45 connectors. These connectors are wired identically. The RJ-45 connectors have eight positions, two of which are wired. The bridge uses the center two pins. The pin out assignment for these connectors is presented below. (Table A-2)

Table A-2: RJ-45 Line connector Pin out Assignments

Pin#	MNEMONIC	FUNCTION
1	NC	Unused
2	NC	Unused
3	NC	Unsed
4	Line +	VDSL Signal +
5	Line -	VDSL Signal -
6	NC	Unused
7	NC	Unused
8	NC	Unused

Appendix B: IEEE 802.3af PSE and Powered Device Power Classifications

Table B-1: IEEE 802.3af PSE and Powered Device Power Classifications

Class	Usage	Minimum Power Levels Output at the PSE	Maximum Power Levels at the Powered Device
0	Default	15.4W	0.44 to 12.95W
1	Optional	4.0W	0.44 to 3.84W
2	Optional	7.0W	3.84 to 6.49W
3	Optional	15.4W	6.49 to 12.95W
4	Reserved for Future Use	Treat as Class 0	Reserved for Future Use: A class 4 signature cannot be provided by a compliant powered device

Appendix C: Product Specification

Key Features & Benefits

- Supports Plug & Play (PnP)
- Compliant with IEEE802.3 10BASE-T, IEEE802.3u, 100BASE-TX and IEEE802.3af Ethernet PD class 0, 1, 2, or 3 standards
- Compliant with ETSI, ITU and ANSI standards
- Support 5M symmetrical at distance up to 1km (3280ft), 15M symmetrical at distance up to 800m (2624ft) and 25Mbps symmetrical at distance up to 500m (1640ft)
- Supports 1 x RJ-45/Terminal block for VDSL line port using single pair phone cable
- Supports 1 x RJ-45 for fast Ethernet port with power injector (NVF-200PD only)
- Supports 1 x DIP switch for line speed and interleave delay setting (NVF-200SE only)
- Supports Auto/5/15/25Mbps speed mode and full duplex for VDSL port
- Supports long packet size up to 1536 bytes
- Supports PBO(Power Back-Off) function for NVF-200PD
- Data and Remote Power work on the same phone line
- Spectral compatibility with xDSL, ISDN (2B1Q/4B3T)
- Supports flow control IEEE802.3x for Full Duplex & Back Pressure for Half Duplex
- Support VDSL and Ethernet surge protection
- Provide LED indicators for Power, Link/Active Status for Ethernet port and Link/Speed for VDSL port
- Mini size and metal case design

Product Specifications

Standard Compliant:	IEEE802.3 10BASE-T standard IEEE802.3u 100BASE-TX standard IEEE 802.3af PoE standard ITU-G993.1 VDSL standard
EMC Compliant:	CE,FCC,VCCI
Safety Compliant:	EN60950
Environmental Protection Compliant:	RoHS
Interface:	1 x RJ-45 for fast Ethernet port with power injector (NVF-200PD only) 1 x RJ-45 for single pair VDSL line port 1 x Terminal block for VDSL line port 1 x DIP switch for line speed and interleave delay setting (NVF-200SE only) 2 x Power jack for 48V power adapter (NVF-200SE only)
Power Protection:	OTP(Over Temperature Protection) OVP(Over Voltage Protection) OCP(Over Current Protection) Robust short circuit protection VDSL and Ethernet surge protection
System Management:	Provides DIP Switch for changing speed mode and interleave delay (NVF-200SE only)
Cable Connection:	Ethernet: Category 3, 4, 5 UTP/STP Line: Category 3, 4, 5 twisted pair phone cable

LED Indication:	Power/Remote Power for system Link/Active Status for Ethernet port Remote Power Link good for POV Power link good for POE Line Speed for line port
VDSL Frequency Spectrum:	NVF-200SE Transmitter: 900 kHz ~ 3.9MHz Receiver: 4MHz & 7.9MHz NVF-200PD Transmitter: 4MHz ~ 7.9MHz Receiver: 900 kHz ~ 3.9MHz
Power Injector(NVF-200PD):	Using CAT 5 UL standard twisted-pair phone cable Max. 15.4W within 500m (1640ft) Max. 12W within 600m (1968ft) Max. 8W within 800m (2624ft) Max. 5.5W within 1000m (3280ft) Note: Real output power depends on PD side (power splitter) power transmission efficiency.
Power Injector mode:	Mid-span mode support connecting to Class 0,1,2,3 of PD side(power splitter)
Distance Reach:	25Mbps within 500m (1640ft) 15Mbps within 800m (2624ft) 5Mbps within 1000m (3280ft)
Operating Temperature:	0℃ ~ 50℃ (32℉ ~ 122℉)
Storage Temperature:	-20℃ ~ 70℃ (-4℉ ~ 158℉)

Humidity:	10% to 90% (non-condensing)
Dimensions:	NVF-200SE: 146mm x 97mm x 33mm (5.75" x 3.82" x 1.30") NVF-200PD: 169mm x 106mm x 33mm (6.65" x 4.17" x 1.30")

Appendix D: Troubleshooting

Diagnosing the Bridge's Indicators

The bridge can be easily monitored through its comprehensive panel indicators. These indicators assist the network manager in identifying problems that hub may encounter. This section describes common problems you may encounter and possible solutions.

1. Symptom:	POWER indicator does not light up (green) after power on.
Cause:	Defective External power supply
Solution:	Check the power plug by plugging in another that is functioning properly. Check the power cord with another device. If these measures fail to resolve the problem, have the unit power supply replaced by a qualified distributor.
Note:	Don't use other AC to DC power adapter

2. Symptom:	Link indicator does not light up (green) after making a connection.
Cause:	Network interface (ex. a network adapter card on the attached device), network cable, or switch port is defective.
Solution:	2.1 Power off and re-power on the VDSL bridge. 2.2 Verify that the switch and attached device are power on. 2.3 Be sure the cable is plugged into both the switch and corresponding device. 2.4 Verify that the proper cable type is used and its length does not exceed specified limits. 2.5 Check the bridge on the attached device and cable connections for possible defects.

	2.6 Make sure that the phone wire must be connected between NVF-200SE and NVF-200PD first, when both are to be power on. 2.7 Replace the defective bridge or cable if necessary.

3. Symptom:	Bridge speed link cannot be established.
Cause:	Bridge speed mode setting failure or phone cable length is over the specification limit of the speed mode.
Solution:	3.1 Please make sure that the phone cable must be connected between NVF-200SE and NVF-200PD when both are power on. NVF-200SE will link depending on the speed mode setting and phone wire length. Therefore, if NVF-200SE can't detect NVF-200PD over phone cable while both power on, this will cause the link to fail. 3.2 Please check phone cable must be Cat5 22~26 gauge with twisted pair and without rust, and the length is not over 1km. 3.3 Please check the correct DIP switch setting that must follow up phone cable length limitation.
Note:	Phone cable must meet CAT 3 standard or above and without clustering, otherwise will cause more cross talk issue to reduce VDSL power driver.

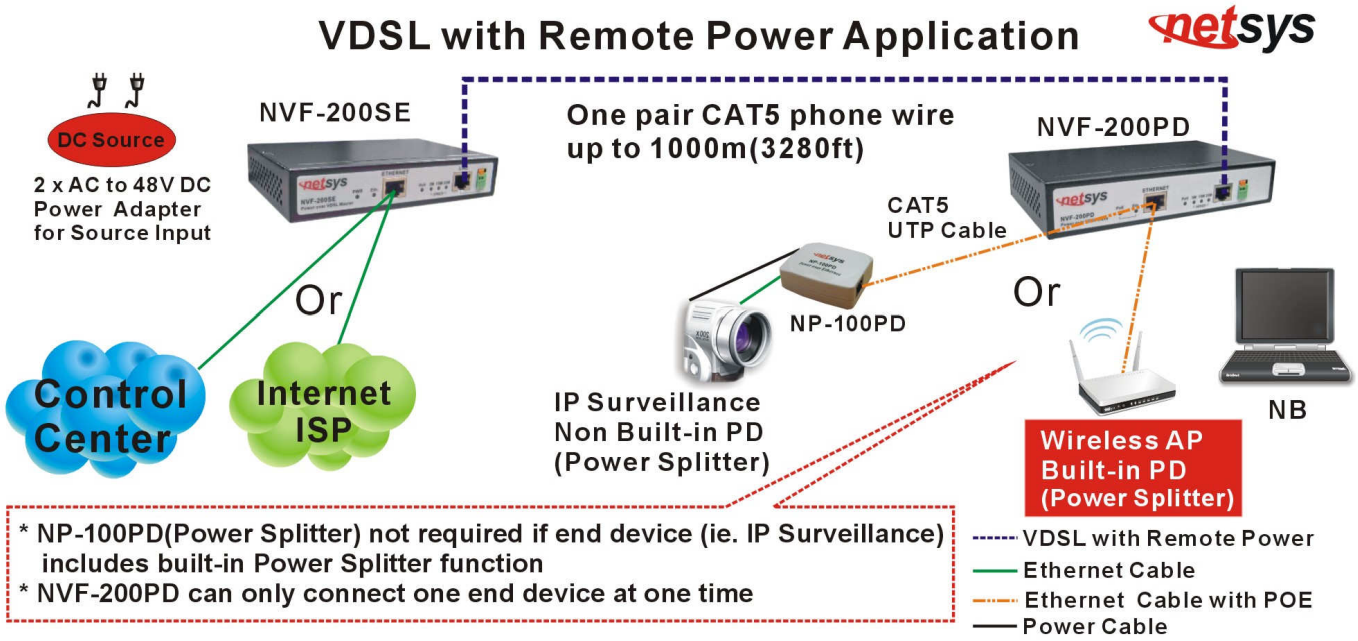
4. Symptom:	Bridges speed mode LED is always flashing.
Cause:	Bridges speed mode link is at the limit of phone cable length.
Solution:	Please change speed mode through DIP switch.
Note:	Don't use phone cable that is untwisted pair and under 0.4mm (26 Gauge) diameter.

5. Symptom:	NVF-200PD PoE LED does not light up.
Cause:	The networking device connecting to the NVF-200PD does not follow IEEE802.3af PoE standards.
Solution:	Make sure that the networking device must conform to IEEE802.3af PoE standards. Also, Make sure that the networking device has embedded power splitter. If not, use an external power splitter for connecting to NVF-200PD.

6. Symptom:	Power splitter cannot power feeding to networking device.
Cause:	NVF-200PD built-in power injector output is limited by phone cable length.
Solution:	Make sure to follow the product specification of NVF-200PD power injector output by differential cable length.

7. Question:	We using NV-200SE/PD kits and the end point device (NVF-200PD)when touch gives them a shock.
Answer:	NVF-200SE will supply DC 96V for feeding NVF-200PD at long length phone cable. Regarding this issue, please connecting FG of NVF-200SE/PD on rear panel to earth ground. Our NVF-200SE/PD had been approval by CE EN60950 of safety certification.

8. Question:	How can I establish the NVF-200PoV connection.
Answer:	When the equipment you want connect to NVF-200PD, please make sure the networking device has built-in power splitter(PD) function, if yes, please connect it directly, if not, please connect between NVF-200PD and networking device through a power splitter(PD side). our PD provide three models(5V/9V/12V) and how to choose PD model, which depend on networking device DC input requirement.



System Diagnostics

Power and Cooling Problems

If the POWER indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply as explained in the previous section. However, if the unit power is off after running for a while, check for loose power connections, power losses or surges at the power outlet, and verify that the fan on back of the unit is unobstructed and running prior to shutdown. If you still cannot isolate the problem, then the internal power supply may be defective. In this case, please contact your local dealer.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (e.g. the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

Transmission Mode

The default method of selecting the transmission mode for Ethernet port is 10/100Mbps Ethernet, while line port is for 5/15/25Mbps speed mode. Therefore, if the link signal is disrupted (e.g. by unplugging the network cable and plugging it back in again, or by resetting the power), the port will try to reestablish communications with the attached device via auto-negotiation. If auto-negotiation fails, then communications are set to half duplex by default. Based on this type of industry-standard connection policy, if you are using a full-duplex device that does not support auto-negotiation, communications can be easily lost (e.g. reset to the wrong mode) whenever the attached device is reset or experiences a power fluctuation. The best way to resolve this problem is to upgrade these devices to a version that support Ethernet and VDSL.

Physical Configuration

If problems occur after altering the network configuration, restore the original connections, and try to track the problem down by implementing the new changes, one step at a time. Ensure that cable distances and other physical aspects of the installation do not exceed recommendations.

System Integrity

As a last resort verify the switch integrity with a power-on reset. Turn the power to the switch off and then on several times. If the problem still persists and you have completed all the preceding diagnoses, then contact your dealer.

Appendix E: Compliance and Safety Information

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a computing device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. The equipment and the receiver should be connected to outlets on separate circuits.
4. Consult the dealer or an experienced radio/television technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

If this telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the

proper functioning of your equipment. If they do, you will be notified in advance in order for you to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Important Safety Instructions

- **Caution:** The direct plug-in wall transformer serves as the main product for disconnecting. The socket outlet shall be installed near the product and be readily accessible.
- **Caution:** Use only the power supply included with this product. In the event the power supply is lost or damaged:In the United States, use only with CSA certified or UL listed Class 2 power supply, rated **2 x 48Vdc 0.4A** or above.
  IN Europe, use only with CE certified power supply, rated **2 x 48Vdc 0.4A** or above.
- **Do not** use this equipment near water, for example in a wet basement.
- **Avoid** using a telephone during an electrical storm. There may be a remote risk of electrical shock from lightning.
- **Do not** use the telephone to report a gas leak in the vicinity of the leaking area.
- If you experience trouble with this unit, please contact customer service of your dealer immediately.
- **DO NOT DISASSEMBLE THIS EQUIPMENT**. It does not contain any user serviceable components.

FCC Warning

This equipment has been tested to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment can generate, use, and radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at owner's expense.

CE Mark Warning

This is a class B product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Warranty

The original owner that the product delivered in this package will be free from defects in material and workmanship for one year parts after purchase.

There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty will not apply to any products which have been subjected to any misuse, neglect or accidental damage, or which contain defects which are in any way attributable to improper installation or to alteration or repairs made or performed by any person not under control of the original owner.

The above warranty is in lieu of any other warranty, whether express, implied, or statutory, including but not limited to any warranty of merchantability, fitness for a particular purpose or any warranty arising out of any proposal, specification or sample. We shall not be liable for incidental or consequential damages. We neither assume nor authorize any person to assume for it any other liability.

WARNING:

1.DO NOT TEAR OFF OR REMOVE THE WARRANTY STICKER AS SHOWN, OR THE WARRANTY IS VOID.

2. WARRANTY VOID IF USE COMMERCIAL-GRADE POWER SUPPLY IS USED AT HARSH ENVIRONMENTS.

Chinese SJ/T 11364-2006

部件名称	有 毒 有 害 物 质 或 元 素					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬[Cr(VI)]	多溴联苯(PBB)	多溴二苯醚(PBDE)
结构壳体	○	○	○	○	○	○
电路组	○	○	○	○	○	○
电源供应器	○	○	○	○	○	○
线材	○	○	○	○	○	○
包装及配件	○	○	○	○	○	○
○：表示该有毒物质在该部件所有均质材料中的含量均在 SJ/T 11364/2006 标准规定的限量要求以下。 ╳：表示该有毒物质至少在该部件的某依均质材料中的含量超出 SJ/T 11364-2006 标准规定的限量要求。						

上述规范仅适用於中国法律